

REMARKS

35 U.S.C. §102 Rejections

A. Claims 1, 15, and 26 are rejected under 35 U.S.C. §102(b) as being anticipated by Simon et al. (USPN 5,661,405).

It is respectfully submitted that claims 1, 15 and 26 have been amended to show more clearly that the present invention utilizes an RH (relative humidity) sensor that measures an impedance to determine a relative humidity (the ratio of the amount of water vapor actually present in the air to the greatest amount possible at the same temperature), in contrast to the sensor of Simon et al., which is used to sense the presence of an electrically conductive liquid by enabling a liquid reaching the sensor to pass through the sleeves to cause a short circuit between the electrodes (i.e., simply passes current in a short circuit, indicating that a leak has occurred)(see claim 1 of Simon et al.). That is, Simon et al. does not teach a humidity sensor that measures impedance, but rather teaches a sensor that indicates presence of a liquid that connects two electrodes to make a short circuit. Humidity sensors and liquid connectivity sensors are clearly different types of sensors that operate differently and are utilized for different purposes.

The sensor of Simon et al. does not provide a measurement of impedance to indicate a relative humidity, as is provided by each of claims 1, 15 and 26, and in fact, the invention of Simon et al. simply indicates a short circuit or no short circuit. Thus, the mechanism implemented by the present invention is completely different from the mechanism implemented by Simon et al. Hence it is respectfully submitted that claims 1, 15 and 26 of the present invention are not anticipated by Simon et al. and are allowable under 35 U.S.C. §102(b).

B. Claims 1, 15, and 26 are rejected under 35 U.S.C. §102(b) as being anticipated by Wardell (USPN 4,532,469).

It is respectfully submitted that claims 1, 15 and 26 have been amended as set forth above to show more clearly that claims 1, 15 and 26 describe a humidity sensor having a pair of electric terminals contacting a polymer structure of rubber and carbon to measure an impedance to determine a relative humidity (the ratio of the amount of water vapor actually present in the air to the greatest amount possible at the same temperature). In contrast, Wardell teaches an apparatus that measures a change in capacitance for a surface, e.g., a roof, by moving the electrodes, wherein the electrodes comprise a roller pair carrying an endless track of conductive polymeric material, along the surface. Hence, in the present invention, the polymer structure

serves as a capturing device (not an electrode) to capture moisture from the air so that the electrodes may measure a difference in impedance for the polymer structure (capturing device). In contrast, Wardell teaches electrodes that contact a surface, each electrode comprising a polymeric material, wherein the electrodes measure capacitance, generally in units of pFm^{-2} , to determine dampness of the surface.

Thus, it is respectfully submitted that claims 1, 15 and 26 of the present invention describe a device that measures moisture content of air, while Wardell teaches a device that measures a moisture level on a surface of an object. In addition, Wardell teaches that the electrodes of his invention comprise a polymeric conductive material, and the electrodes of the present invention are not required to be made of polymeric conductive material.

Thus, it is submitted that claims 1, 15 and 26 of the present invention are not anticipated by Wardell and are allowable under 35 U.S.C. §102(b).

35 U.S.C. §103 Rejections

A. Claims 2-4 are rejected under 35 U.S.C. §103(a) as being unpatentable over Simon et al. (USPN 5,661,405).

Independent claim 1 has been amended to show more clearly that the present invention utilizes a sensor that measures an impedance of a polymer structure to determine a relative humidity, in contrast to the sensor of Simon et al., which is used to sense the presence of an electrically conductive liquid by enabling a liquid reaching the sensor to pass through the sleeves to cause a short circuit between the electrodes. It is respectfully submitted that the liquid sensor of Simon et al. is very different from the humidity sensor of amended claim 1.

The genius of invention is often a combination of known elements which in hindsight seems preordained. When the art in question is relatively simple, the opportunity to judge by hindsight is particularly tempting. Consequently, the courts have advised that one needs to guard against falling victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher. In determining obviousness, the invention must be considered as a whole without the benefit of hindsight, and the claims must be considered in their entirety. See W.L. Gore & Assocs. v. Garlock, Inc., 721 F.2d 1540, 1551, 220 USPQ 303, 312-13 (Fed. Cir. 1983); see also Medtronic, Inc. v. Cardiac Pacemakers, Inc., 721 F.2d 1563, 1567, 220 USPQ 97, 101 (Fed. Cir. 1983). The courts have held that it is impermissible to use hindsight to determine obviousness, e.g., using the inventors' success as evidence that the success would have been expected. See In re Kotzab, 217 F.3d 1365, 1369,

55 USPQ2d 1313, 1316 (Fed. Cir. 2000) (noting the importance of casting the mind back to the time of the invention to avoid the "insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher").

Thus, it is submitted that claims 2-4, which depend from amended claim 1, are allowable under 35 U.S.C. §103(a), based at least on their dependency from amended claim 1, and are patentable over Simon et al. (USPN 5,661,405).

B. Claims 5-14, 16-19 and 27-29 are rejected under 35 U.S.C. §103(a) as being unpatentable over Simon et al. (USPN 5,661,405), in view of Tachikawa et al. (USPN 6,375,863).

As noted above, Simon et al. teaches a sensor that indicates presence of a liquid that connects two electrodes to make a short circuit. Tachikawa et al. teaches the use of NBR-Acrylonitrile Butadiene rubber, but does not teach using same in a humidity sensor. There is no teaching or suggestion of combining Simon et al. and Tachikawa et al., and even if combined, it is respectfully submitted that said references would not teach the humidity sensor of the present invention.

It is respectfully submitted that the courts have held that the Examiner may not suggest modifying references using the present invention as a template absent a suggestion of the desirability of the modification in the prior art. *In re Fitch*, 23 U.S.P.Q.2d 1780, Fed Cir. 1992. Something in the prior art as a whole must suggest the desirability, and thus, the obviousness, of making the combination. *Alco Standard Corp. v. Tennessee Valley Authority*, 808 F.2d 1490, 1 U.S.P.Q. 2d 1337 (Fed. Cir. 1986). When a rejection depends on a combination of prior art references, there must be some teaching, suggestion or motivation to combine the references. *In re Geiger*, 815 F.2d 686, 688 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987).

Thus, since there is no teaching or suggestion of combining the Simon et al. reference with the Tachikawa et al. reference, and even if combined, said references would not teach the present invention, it is respectfully submitted that claims 5-14, 16-19 and 27-29 are patentable over Simon et al. and/or Tachikawa et al. under 35 U.S.C. §103(a).

C. Claims 20-24 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lee (USPN 5,847,261) in view of Simon et al. (USPN 5,661,405).

Claim 20 has been amended to show more clearly that the present invention utilizes a polymer-type humidity sensor that measures an impedance of a polymer structure to determine

a relative humidity (the ratio of the amount of water vapor actually present in the air to the greatest amount possible at the same temperature), in contrast to the sensor of Simon et al., which is used to sense the presence of an electrically conductive liquid by enabling a liquid reaching the sensor to pass through the sleeves to cause a short circuit between the electrodes. Thus, claim 20 is not taught or suggested by Simon et al.

Lee does not teach measurement of the relative humidity of a microwave oven. Lee teaches determination of a polarity of a detecting signal supplied from a vapor sensor to see if the polarity of the signal has been reversed so that malfunction of an electronic circuit during a cooking operation may be prevented. Lee's invention utilizes a prior art vapor sensor shown in FIG. 2, wherein the sensor is a superconducting sensor is a ceramic disk with a second disk surrounding the ceramic disk and having a first electrode terminal and a second electrode terminal attached thereto, respectively. Thus, Lee does not teach or suggest the "polymer-type humidity sensor disposed at said air outlet to obtain information on a humidity content of the discharged air for use by said control unit, wherein said polymer-type humidity sensor comprises a polymer structure of a predetermined shape and having a rubber and carbon, and a pair of electric terminals contacting the polymer structure to measure an impedance to determine a relative humidity," as is described in claim 20 of the present invention.

Thus, since there is no teaching or suggestion of combining the Simon et al. reference with the Lee reference, and even if combined, said references would not teach the present invention, it is respectfully submitted that claim 20 is patentable over Simon et al. and/or Lee under 35 U.S.C. §103(a).

D. Claim 25 is rejected under 35 U.S.C. §103(a) as being unpatentable over Lee (USPN 5,847,261) in view of Simon et al. (USPN 5,661,405), as applied to claims 20-24 above, and further in view of Tachikawa et al. (USPN 6,375,863).

It is respectfully submitted that there is no teaching or suggestion of combining Lee, Simon et al., and Tachikawa et al., and such a combination is not permitted without said teaching or suggestion. For the reasons cited above, claim 20 of the present invention is submitted to be allowable over Lee, Simon et al., and Tachikawa et al. under 35 U.S.C. §103(a). Since claim 25 depends indirectly from amended claim 20, it is respectfully submitted that claim 25 is allowable over Lee, Simon et al., and Tachikawa et al. under 35 U.S.C. §103(a) for at least the reasons that amended claim 20 is submitted to be allowable.

CONCLUSION

In accordance with the foregoing, claims 1, 15, 20 and 26 have been amended. Claims 1-29 are pending and under consideration.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

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By:

Darleen J. Stockley
Darleen J. Stockley
Registration No. 34,257

1201 New York Avenue, NW, Suite 700
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501